Supplementary Information: Tree height, microhabitat, and hydraulic traits shape drought responses in a temperate broadleaf forest

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Supplementary Information

Table S1: Species-specific bark thickness regression equations

Species	Equations	r.2
Carya cordiformis	ln[B]=-1.56+0.416*ln[DBH]	0.226
Carya glabra	ln[B]=-0.393+0.268*ln[DBH]	0.040
Carya ovalis	ln[B]=-2.18+0.651*ln[DBH]	0.389
Carya tomentosa	ln[B]=-0.477+0.301*ln[DBH]	0.297
Fagus grandifolia	ln[B]=1*ln[DBH]	NA
Fraxinus americana	ln[B]=0.418+0.268*ln[DBH]	0.256
Juglans nigra	ln[B]=0.346+0.279*ln[DBH]	0.246
Liriodendron tulipifera	ln[B]=-1.14+0.463*ln[DBH]	0.545
Quercus alba	ln[B]=-2.09+0.637*ln[DBH]	0.603
Quercus prinus	ln[B]=-1.31+0.528*ln[DBH]	0.577
Quercus rubra	ln[B]=-0.593+0.292*ln[DBH]	0.087

Table S2: Species-specific height regression equations

Species	Equations	r.2
Carya cordiformis	ln[H]=0.391+0.805*ln[DBH]	0.899
Carya glabra	ln[H]=0.654+0.728*ln[DBH]	0.890
Carya ovalis	ln[H]=0.939+0.641*ln[DBH]	0.922
Carya tomentosa	ln[H]=0.851+0.682*ln[DBH]	0.890
Fagus grandifolia	ln[H]=0.574+0.713*ln[DBH]	0.887
Liriodendron tulipifera	ln[H]=1.21+0.559*ln[DBH]	0.760
Quercus alba	ln[H]=2.07+0.318*ln[DBH]	0.523
Quercus prinus	ln[H]=0.594+0.713*ln[DBH]	0.799
Quercus rubra	ln[H]=1.42+0.473*ln[DBH]	0.832
all	ln[H]=0.946+0.621*ln[DBH]	0.868

Table S3: Palmer drought severity index (PDSI) by month for focal droughts and other years referenced in the manuscript

	year	month	PDSI	rank
focal droughts				
	1966	May	-2.98	2
	NA	June	-3.40	2
	NA	July	-4.08	2
	NA	August	-4.82	1
	1977	May	-2.96	3
	NA	June	-3.28	3
	NA	July	-3.61	3
	NA	August	-3.68	3
	1999	May	-3.63	1
	NA	June	-4.21	1
	NA	July	-4.53	1
	NA	August	-4.64	2
others				
	1964	May	-1.08	20
	NA	June	-1.97	11
	NA	July	-2.46	8
	NA	August	-2.98	5
	1991	May	-1.79	10
	NA	June	-2.10	10
	NA	July	-2.17	10
	NA	August	-3.06	4
	2007	May	-1.37	16
	NA	June	-1.59	16
	NA	July	-2.40	9
	NA	August	-2.55	11

Table S4: Candidate variables for best model

prediction	variable	variable_description	top_model
1.2	position_all	crown position with H	1999
2.2	height.ln.m	ln[H]	all
2.2	height.ln.m	ln[H]	1966
2.3	position_all	crown position alone	1966
2.4	TWI.ln	ln[TWI]	all
2.4	TWI.ln	ln[TWI]	1977
2.4	TWI.ln	ln[TWI]	1999
3.1	rp	ring porosity	1999
3.2	PLA_dry_percent	PLA	all
3.2	PLA_dry_percent	PLA	1966
3.4	mean_TLP_Mpa	TLP	all
3.4	mean_TLP_Mpa	TLP	1977

Table S5. Correlation of species' traits with tree height across all individuals in the ForestGEO plot

variable	model	coefficient	p-value
WD	WD~ln[H]	-0.16	0
LMA	LMA~ln[H]	7.86	0
ring porosity	ring porosity~ln[H]	0.34	0
PLA	PLA~ln[H]	1.37	0
TLP	PLA~ln[H]	0.13	0

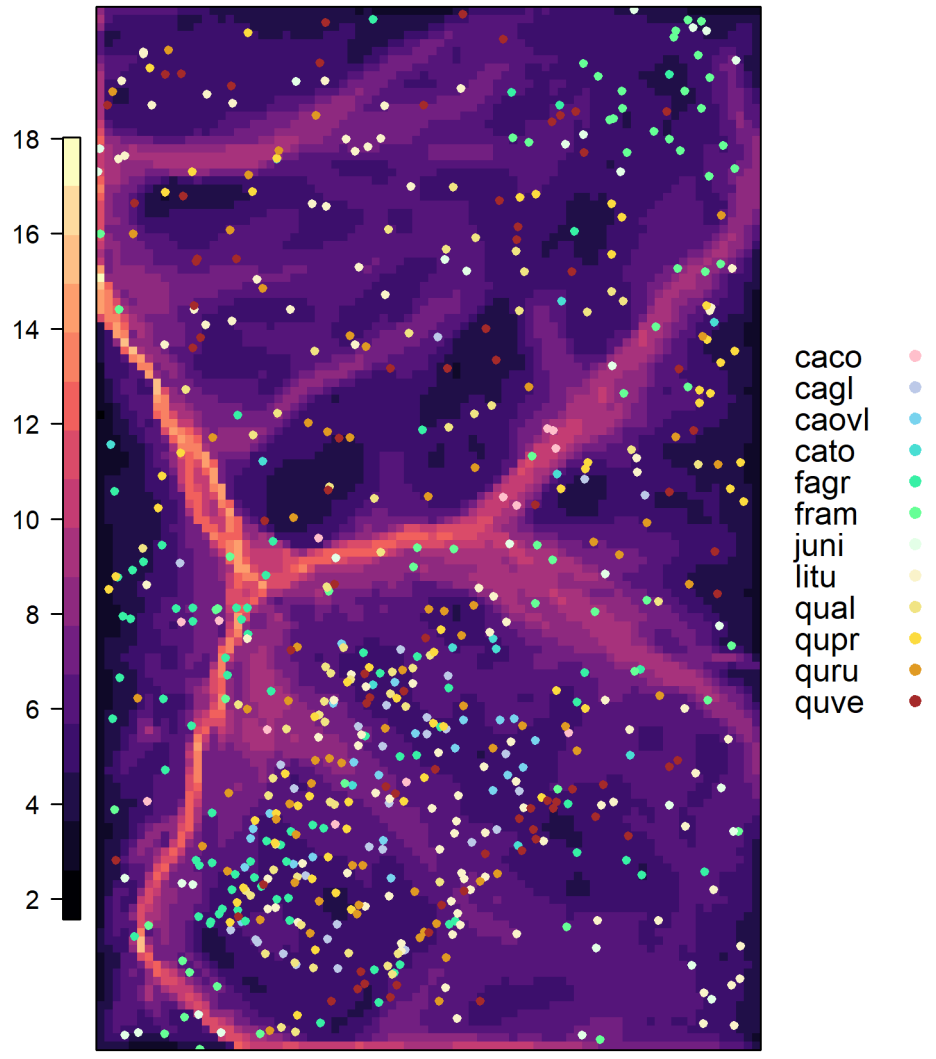

Figure S1: Map of ForestGEO plot showing TWI and location of cored trees

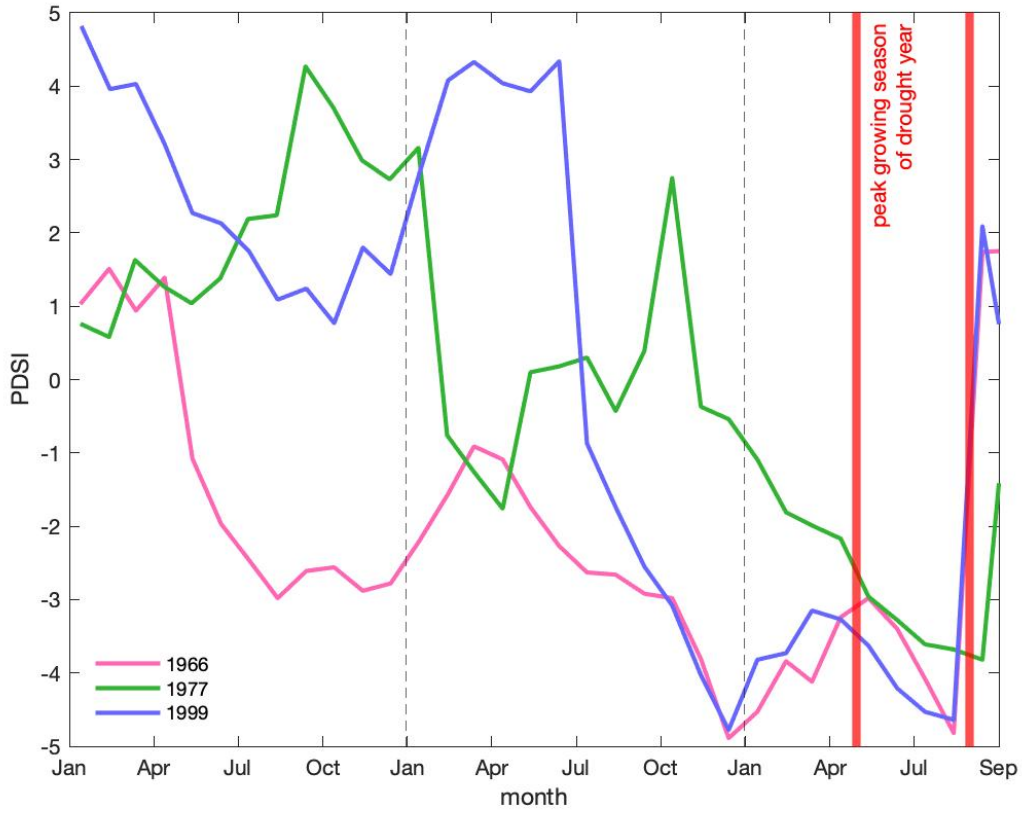

Figure S2: Time series of Palmer Drought Severity Index (PDSI) for the 2.5 years prior to each focal drought